

## ABSTRACT

A link based network protection path calculation mechanism wherein a protection route is calculated that is guaranteed not to traverse the link it is intended to protect. The mechanism takes advantage of the fact that the same color cannot pass twice through the same optical fiber. The protection path is determined by eliminating all colors from the logical topology of the network except for the color corresponding to the link to be protected before executing the search algorithm. This serves to guarantee that the protection path calculated will not traverse the same physical fiber as the link to be protected. Virtual colors can be assigned to the links running through fiber bundles such that they do not pass through the same fiber/bundle twice.

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